

**INTERNATIONAL PRELIMINARY
 EXAMINATION REPORT**

International application No. PCT/EP 03/09061

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17):*

Description, Pages

1-20 as originally filed

Claims, Numbers

1-6 received on 11.10.2005 with letter of 11.10.2005

Drawings, Sheets

1/13-13/13 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-6
	No: Claims	
Inventive step (IS)	Yes: Claims	1-6
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-6
	No: Claims	

2. Citations and explanations

see separate sheet

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Re Item V**Reasoned statement with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

1. Reference is made to the following documents:

D1: US-A-6 139 262 (RAVIDRANATH RAVI A) 31 October 2000

D2: GB-A-1 231 152 (DRESSER INDUSTRIES) 12 May 1971

2. The document D1 is regarded as being the closest prior art to the subject-matter of claim 1, and discloses (the references in parentheses applying to this document):

A variable nozzle device comprising an annular nozzle passage formed by a gap between two opposing wall members (34, 40),

a rotation conversion mechanism for adjusting said gap by converting an actuating rotational movement of said mechanism into a translatory movement of at least one of said wall members (col. 6, l. 44-65),

said rotation conversion mechanism comprising a stationary backplate (28) rotatably supporting a thrust member (78) carrying displacing means (64),

and an actuating device (110) for rotating the thrust member (78) relative to the movable wall member (34) so as to displace said movable wall member (34) toward the other wall member (40),

said movable wall member (34) being arranged on said stationary backplate (28) such that it is displaceable in the direction of the rotational axis of said thrust member (78) and incapable of rotating relative to said stationary backplate (28) (col.6, l. 57-65).

2.1 The subject-matter of claim 1 from this known variable nozzle device in that the displacing means comprise a pair of ramp portions provided on surfaces of said thrust member and said movable wall member that are axially facing each other, and in that these ramp portions are abutted against each other along axially inclined surfaces.

2.2 The subject-matter of claim 1 is therefore new (Article 33(2) PCT).

3. The problem solved by the present invention may be regarded as to provide a variable nozzle device mechanism having an improved reliability and simplicity of construction.

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4. The solution to this problem proposed in claim 1 of the present application is considered as involving an inventive step (Article 33(3) PCT) for the following reasons:

4.1 In D1, the mechanism of converting a rotational movement into an axial movement is performed by a ball bearing mechanism.

4.2 Replacing this ball bearing mechanism with two abutting ramp portions firstly simplifies the construction. Secondly, the reliability is enhanced since foreign matter can more easily block the mechanism of D1 than the mechanism of the present invention. Thirdly, thermal distortions can be absorbed better.

4.3 There is no hint in the prior art suggesting this constructional change. It must therefore be concluded that the subject-matter of claim 1 involves an inventive step.

5. Furthermore it is noted that, with respect to D2, providing the two ramp portions on two axially facing surfaces of the movable wall member and the thrust member, instead of the mechanism comprising an additional post (23) with wedge-shaped washers (39) and the helical cams (35), represents a considerable simplification of the construction falling outside the scope of customary practice of a person skilled in the art.

6. Claims 2-6 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

7. The claimed invention is industrially applicable in the field of turbochargers (Article 33(4) PCT).